Production of propylene from methanol via two-stage catalytic dimethyl ether conversion, introduces dimethyl ether, vapor and steam into reactors containing shape-selective catalyst

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Abstract

The stereo-selective catalyst of zeolite, packs vertical reactors in series. A side stream of dimethyl ether (DME)-containing vapor and steam forms a product stream which is extracted and sent to a second reactor with a further side stream of DME/vapor/steam mixture. From the last reactor in the sequence, product mixture is extracted and cooled. A propane-rich fraction is separated. Some residue is recycled. The stereo-selective catalyst of zeolite, packs vertical reactors in series. A side stream of DME-containing vapor and steam, passed into the first reactor, forms a product stream which is extracted and sent to the second reactor, together with a further side stream of DME/vapor/steam mixture. From the last reactor in the sequence, product mixture is extracted and cooled. A propane-rich fraction is separated. The residue, partially gaseous, contains C3+ hydrocarbons. At least some residue is recycled to one or more reactors.